

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

OEVERING et al

Atty. Ref.: **4662-39**

Serial No. **10/541,196**

Group: **1621**

Filed: **June 30, 2005**

Examiner: **Valenrod**

For: **PROCESS FOR TREATING AN ORGANIC SOLUTION COMPRISING
CYCLOHEXANONE OXIME, CYCLOHEXANONE, AND ORGANIC SOLVENT**

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER RULE 132

Sir:

Pursuant to 37 CFR §1.132, the undersigned, **Hendrik OEVERING**, hereby declares and states that:

1. I received a PhD in Organic Chemistry at the University of Amsterdam, The Netherlands, in 1988.
2. I am presently and for all times relevant to the facts stated herein have been employed by DSM Research B.V. ("DSM") in its research facility located in Geleen, The Netherlands. Specifically, I have been employed in chemical research at DSM since 1987, and since 1989 I have been working specifically in the area of chemical research related to the production of caprolactam, including the synthesis and recovery of its precursor cyclohexanone oxime.
3. As a direct result of my chemical research responsibilities, I became co-inventor of the subject matter disclosed and claimed in the above-

identified U.S. Patent Application Serial No. 10/541,196 ("the '196 application"). I have read and am therefore familiar with the '196 application and the claims as presently pending therein.

4. I have also read and am familiar with the Official Action dated August 31, 2007 which was issued in the '196 application. Specifically, in such Official Action, the U.S. Examiner has rejected the pending claims as "obvious" (35 USC §103(a)) based on the combination of Rulkens et al (EP 0 005 291 A1) and Stamicarbon (British Patent 1,138,750).
5. In addition to what already has been mentioned in the specification of the '196 application, the following additional information, which is well known to the skilled person working in the cyclohexanone oxime art, should also be into account when reviewing the patentability of the claimed invention.
6. Cyclohexanone oxime is known to be a compound which is sensitive to thermal decomposition. This can, for instance, be seen from the description at column 1, lines 4-10 of EP 0 550 965 in the name of Sumitomo Chemical Company, Limited, which reads:

"Thermal decomposition of cycloalkanone oximes occurs when they are used at high temperatures, for example, when they are vaporized for use. Not only this thermal decomposition causes loss of cycloalkanone oximes, but also the decomposition products are sometimes harmful for the subsequent operations..."
7. Clearly such thermal decomposition will also occur during distillation, as is the case in the distillative separation steps, especially the second

distillation, as are used in the process of Rulkens et al. '291 where no recycling of the top product is considered or suggested. Thus, the skilled person will not consider the recycling of the top product of the second distillation (as is done according to the claimed invention of the '196 application) because he would believe that this would be very unfavorable for the process as a whole: the cyclohexanone oxime being recycled in such way through the oximation zone and first and second distillation steps, would be exposed more heavily to conditions where thermal decomposition is expected to occur, which then would be expected to result in undesirable higher production losses.

8. Combination of the teachings of Rulkens et al. '291 (where a second distillation step is employed, without recycling of cyclohexanone oxime) with the teachings of Stamicarbon '750 (where only one distillation step is employed, and only solvent is recycled to the oximation step), therefore cannot be deemed to be obvious.
9. The unobviousness of the claimed invention of the '196 application is even more clearly evident by the fact that the top stream from the second distillation, as it is employed for recycling in the process for the claimed invention of the '196 application, comprises both cyclohexanone oxime and cyclohexanone, notably at a ratio which is much higher than the ratio between cyclohexanone oxime and cyclohexanone as can be seen in Example I of Rulkens et al '291.
10. In this regard, the composition of the second distillation top product of Example 1 in Rulkens et al '291 is:
 - a. cyclohexanone (wt.%) = 6.1
 - b. cyclohexanone oxime (wt%) = 1.7
 - c. toluene (wt%) = 92.2

Thus, the ratio oxime:anone in Example 1 of Rulkens et al '291 is about 0.28.

11. According to the invention of the '196 application, (see the Table at page 15 therein), the composition of the second distillation top product is:

Anone conc. (wt%)	5.3	5.3	4.8	4.7	5.9	6.8
Oxime conc. (wt%)	22.8	22.6	19.3	17.8	16.6	15.4
Toluene conc. (wt%)	71.9	72.1	75.9	77.5	77.5	77.8

Therefore, the ratio oxime:anone is about 2.3 to 4.3, which is clearly higher than the ratio oxime:anone in Rulkens et al '291.

12. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully Submitted,

13-12-2007

Date Signed

Hendrik Oevering

Hendrik OEVERING